Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Obstructive Lung Diseases

TOPIC: Obstructive Lung Diseases
TYPE: Medical Student/Resident Case Reports

A COPD EXACERBATION THAT OCCURRED AFTER THE MRNA COVID-19 VACCINE

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INTRODUCTION: We present a case of a COPD exacerbation that occurred after receiving the second dose of the Moderna COVID-19 vaccination, which resulted in a hospital admission for hypoxic respiratory failure.

CASE PRESENTATION: This is an elderly male with a history of mixed obstructive/restrictive lung disease who presented with shortness of breath. At baseline, his breathing is well controlled and he is compliant with daily Fluticasone/salmeterol and tiotropium, albuterol as needed, and supplemental oxygen at 2-3L per minute as needed. Earlier on the day of admission, he had received his second dose of the Moderna COVID-19 vaccine. He initially noted worsening of his breathing throughout the afternoon as well as the development of a productive cough. As he prepared for bed, he noticed worsening shortness of breath and increasing mucus production, at which time, he self-administered an albuterol treatment and applied his nasal cannula. His symptoms did not improve so EMS was called. On arrival, they noted that he was saturating 70% of 2L of oxygen. It was immediately increased and he was given an additional albuterol treatment. At the hospital, he was still seen to be hypoxic even with increased oxygen flow rates; PO2 was noted to be only 46. He was placed on noninvasive positive-pressure ventilation, started on steroids, scheduled breathing treatment and admitted for acute hypoxic respiratory failure. Given his history of COPD, no clinical or radiographic signs of infection, negative COVID and influenza testing, and no clinical signs of pulmonary emboli, he was treated for a presumed COPD exacerbation. He was slowly transitioned to nasal cannula, and discharged at his pre-hospital oxygen requirements.

DISCUSSION: Common causes for COPD exacerbations include medical non-adherence, environmental triggers, and infections. The latter two causes both have complex cellular interactions that lead to an acute worsening of lung function(1). Other factors, including influenza vaccination, have proven to reduce the overall incidence of exacerbations and hospital visits(2). However, one study published in the journal Thorax showed as much as a 3.3 fold increased risk of acute COPD exacerbation in the first few days after being vaccinated. The mechanism is not yet known, but the association is strong enough that these patients should be informed that their breathing may worsen after receiving the influenza vaccination.(3)

CONCLUSIONS: This single case report demonstrates a COPD exacerbation with no other causative mechanism identified. We feel that the COVID vaccination likely caused this exacerbation. Further studies should be performed to understand why certain vaccinations cause these acute changes in breathing in a small percentage of patients. Still, COVID-19 represents a significant risk to patients with lung disease, and they should continue to be strongly encouraged to obtain vaccination.

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